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Job No.: 6519-91355

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 PATENT NO. 23 18 596 B2
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METHOD OF TREATING LAUNDRY IN DRYERS

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Printed documents taken into consideration in
 evaluating the patentability:
 US 35 83 180
 US 31 14 653
 US 30 02 288

Claims

1. A method for treating laundry in dryers by means of which solutions or emulsions of known laundry treatment agents are directly sprayed onto the laundry, characterized in that the agent is sprayed on the laundry after said laundry has reached a degree of moisture of 15%.
2. The method as claimed in Claim 1, characterized in that the laundry treatment agents have the following composition:
 - 0.5-50 parts of cationic and/or nonionogenic active substances
 - 0.1-5 parts of a deodorizing agent
 - 0.1-5 parts of an optical brightener
 - 0.1-5 parts of a perfume

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0.5-80 parts of water or solvents and

10.0-50 parts of liquefied or compressed nonflammable aerosol propellant.

The subject matter of the present invention relates to a method for treating laundry in dryers by means of which solutions or emulsions of known laundry treatment agents are directly sprayed onto the laundry.

In the last few years, more and more time-controlled and electronically controlled laundry dryers, so-called tumblers, have appeared on the market, in which dryers the washed laundry, after having undergone the spinning cycle in the washing machine, can be dried so as to be ready for folding and storing or ready for ironing.

Frequently, however, it is found that this type of drying process leaves the laundry with the typical undesirable musty smell of laundry or that the laundry is electrostatically charged, to which latter especially synthetic pieces of laundry are prone.

To eliminate these disadvantages, the washing machines have been designed to have an additional cycle, the so-called laundry softening cycle, which follows the wash cycle and the subsequent rinse cycle during which the laundry is most often rinsed 4-5 times. This involves the addition of preferably cationic and/or nonionogenic substances, emulsifying agents, perfumes, optical brighteners, deodorizing agents, and dyes to the rinsing water. A part of these substances is absorbed by the laundry and is intended to prevent the above-described disadvantages while the laundry is subsequently dried in the dryer. But this approach also did not lead to the desired results since during the drying cycle, the majority of these predominantly readily volatile substances are removed from the laundry by the stream of air that flows through the tumbler and are therefore discharged. Furthermore, a large portion of the substances which are added to the laundry softening cycle is disposed of along with the rinsing water and thus contaminates the wastewater to a considerable degree. Given the importance of environmental protection, this is undesirable. An added disadvantage is that the laundry softening cycle automatically follows the rinsing cycles in the washing machine so that all pieces of laundry that are present in the washing machine are inevitably treated although laundry that is to be starched does not need this type of treatment.

To perfume the laundry, cartridges filled with concentrated solutions containing perfumes which evaporate and are thus transferred onto the laundry have also been introduced at a certain point into the air circulation system of the tumbler. This approach, however, has two considerable disadvantages. First of all, with this method it is possible to only apply the readily volatile perfumes, and secondly, the administration of these perfumes takes place throughout the

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entire drying cycle so that again a large portion of the evaporated perfume is eliminated by the stream of air and is therefore disposed of, thus making it impossible for the laundry to absorb it.

According to the U.S. Patent 30 02 288, laundry treatment agents are sprayed into the dryer at a time when the laundry is already basically dry, i.e., shortly before the end of the drying cycle. At this stage of the drying cycle, however, the active substances are no longer sufficiently distributed, which poses the risk that the laundry will show a pattern of cloudlike stains.

It was now discovered that the disadvantages mentioned can be eliminated if the solutions or emulsions of known laundry treatment agents are sprayed on after the laundry has reached a degree of moisture of 15%.

It is possible to use all substances that are required to improve the laundry, such as cationic and/or nonionogenic finishing agents, antistatic agents, perfumes, deodorizing agents, optical brighteners, and dyes.

Suitable finishing and antistatic agents include, for example, quaternary ammonium compounds, such as dimethyl distearyl ammonium chloride, fatty acid condensation products, such as fatty acid polyglycol ester, fatty acid amide polyglycol ether, and cationic imidazoline compounds, ethylene oxide adducts, or alkyl ether phosphates.

Suitable deodorizing agents include, for example, phenolic polyoxymethylene derivatives, quaternary ammonium compounds, formaldehyde derivatives, 2,4,4'-trichloro-2'-hydroxydiphenyl ether, 3,4,4'-trichlorocarbanilides or alkylolamides of undecylenic acid.

Laundry treatment agents that are suitable for the purpose according to the present invention can have the following composition:

0.5-50 parts of cationic and/or nonionogenic active substances

0.1-5 parts of a deodorizing agent

0.1-5 parts of an optical brightener

0.1-5 parts of a perfume

0.5-80 parts of water or solvents and

100 [sic; 10.0]-50 parts of liquefied or compressed nonflammable aerosol propellant.

Such an agent can, for example, consist of:

6% of dimethyl distearyl ammonium chloride,

0.5% of nonyl phenol polyglycol ether with 9 mol ethylene oxide

1% of the quaternary ammonium compound BTC 776 of the firm of Organon,

Düsseldorf, Germany

1% of the optical brightener UVITEX SEB, an oxazole derivative of the firm of Ciba-Geigy, Basel, and

1% of the perfume HERPYL 49S/72 of the firm of UOP, Paris-Colombe,

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90.5% of water

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